1106-20-442 **Robert Fitzgerald Morse*** (morse@evansville.edu). *Capable special $p$-groups of rank 2: The isomorphism problem.*

A finite $p$-group $G$ such that $G' = Z(G)$ and $G'$ is an elementary abelian $p$-group of rank 2 is called special of rank 2. A group $G$ is capable if there exists a group $H$ such that $H/Z(H)$ is isomorphic to $G$. A result of H. Heineken shows the capable special $p$-groups of rank 2 have order at most $p^7$. Of such groups of exponent $p$ we know from published classifications that there is a constant number of isomorphism classes. The number of isomorphism classes of special $p$-groups of rank 2 and exponent $p^2$ grows with $p$ for groups of order $p^5$, $p^6$, and $p^7$. However, our use of the small groups library in GAP gives evidence that the number of capable special groups of each order is constant. Hence, the capable special $p$-groups of rank 2 and exponent $p^2$ cannot only be characterized by a structure description but can actually be classified. We will show that for odd $p$ there are three isomorphism classes each for capable special $p$-groups of rank 2 exponent $p^2$ and order $p^5$ and $p^6$ and one such class for order $p^7$.

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